CLAIMS

1. Installation for loading a loading space (1) with piece goods (2), which preferably have an at least partly deformable piece good surface, having a feed device (3) on which the piece goods (2) can be singly fed, as well as a transfer device (4) to which the piece goods (2) can be transferred from the feed device (3) and by means of which the piece goods (2) can be brought into the interior of the loading space (1), characterized in that at least one shaping means (14) is provided through which the piece goods (2) can be brought into a predeterminable shape or orientation, that the transfer device (4) transfers the piece goods (2), whilst maintaining their shape previously given by the shaping means (14), individually or groupwise with the aid of in each case a loading means into the interior of the loading space (1) at least open on one side, and that a separating unit (23) is provided, which separates the piece goods (2) from the loading means and deposits the said piece goods in the loading space.

2. Installation according to claim 1, characterized in that the loading means are constructed as shaping means (14).

3. Installation according to claim 1 or 2, characterized in that the transfer device (4) provides a vertically adjustable conveyor (6) on which the at least one loading means (14) with the piece goods (2) is linearly movable in a substantially horizontal conveying direction into the interior of the loading space (1) open on at least one side.

4. Installation according to claim 1 or 2, characterized in that the complete loading space is located on a lifting table.

5. Installation according to one of the claims 1 to 4, characterized in that the separating unit (23) can be brought into engagement with at least one piece good (2) of the piece goods (2) located within a loading means (14) and that the at least one loading means (14) is linearly movable counter to the conveying direction relative to the separating unit (23).

6. Installation according to one of the claims 1 to 4, characterized in that the feed device (3) is constructed at least zonally as a motor-driven linear conveyor (7) and has an end section constructed as an accumulating conveyor (8).

7. Installation according to claim 6, characterized in that the accumulating conveyor (8) has a stop face (9) oriented transversely to the conveying direction of the feed device.

8. Installation according to claim 6 or 7, characterized in that the accumulating conveyor (8) provides a sliding or rolling plane for the piece goods (2), which is flush or lowered with respect to the bearing surface of the linear conveyor (7).

9. Installation according to one of the claims 1 to 6, characterized in that a transfer device (12) is provided on which the piece goods (2) fed on the feed device (3) are individually or groupwise transferred into in each case one loading means (14).

10. Installation according to claim 9, characterized in that if the piece goods are to be reoriented the transfer device

(12) has a fork-like construction and bilaterally at least partly encloses the piece goods (2) on the accumulating conveyor (8) and by a tilting process and/or a translatory process transfers same into a loading means (14).

11. Installation according to claim 9 or 10, characterized in that there is a making ready unit (16) for empty loading means (14), which cyclically moves forward empty loading means (14) and orients the same with respect to the transfer device (12).

12. Installation according to one of the claims 1 to 11 characterized in that the loading means (14) are constructed in the form of a U-shaped longitudinal profile with at least one open front side or in plate form.

13. Installation according to claim 12, characterized in that the U-shaped longitudinal profile has two spaced longitudinal profile arms with a clearly defined mutual spacing (15).

14. Installation according to claim 13, characterized in that the spacing between the two longitudinal profile arms is such that a piece good (2) located within the loading means (14) is given a mechanical pressure on its surface by the two longitudinal profile arms and that the loading means (14) have a length corresponding to the length of the accumulating conveyor (8).

15. Installation according to one of the claims 4 to 12, characterized in that the transfer device (4) provides a loading unit (5), which is directly juxtaposed with the vertically adjustable conveyor (6) and provides at least two vertically superimposed working planes (19, 22) and that the working planes (19, 22) in each case have a cyclically

operatable conveyor system (21) for loading or unloading the working planes (19, 22) with loading means (14) which are empty or filled with piece goods (2).

16. Installation according to one of the claims 8 to 15, characterized in that a plurality of loading means (14) filled with piece goods (2) can be transferred from the first working plane (19) of the loading unit (5) to the vertically adjustable conveyor (6), that the loading means are arranged in parallel, juxtaposed manner in the conveying direction, that the total width of all the juxtaposed loading means (14) is the same or slightly smaller than the loading space width and that in each case the length of the loading means is slightly smaller than the length of the loading space.

17. Installation according to one of the claims 1 to 16, characterized in that the vertically adjustable conveyor (6) has at least one sensor system for detecting an actual fill level of the loading space (1) filled with piece goods and that a control unit is provided which vertically matches the conveyor to the actual fill level prior to the transfer of the piece goods into the loading space.

18. Installation according to one of the claims 1 to 17, characterized in that the separating unit (23) is connected to the vertically adjustable conveyor (6) and has holding means, which separates the piece goods from the loading means counter to the conveying direction during the movement of the conveyor.

19. Installation according to claim 18, characterized in that the separating unit (23) is constructed like a rake and its prongs constructed as holding means can be lowered within the loading means.

20 Installation according to one of the claims 1 to 19, characterized in that the piece goods are sacks filled with bulk material such as cereals, sugar or sand.

21. Method for loading a loading space with piece goods which preferably has an at least partly deformable piece good surface and which can be individually fed by means of a feed device and transferred to a transfer device through which the piece goods can be brought into the interior of the loading space, characterized by the following method steps:

- feeding in the piece goods in an area located outside the loading space,
- shaping the individual or groupwise combined piece goods by the action of at least one external force on the piece goods,
- transfer of the piece goods to the transfer unit and introduction of the piece goods into the loading space, whilst retaining the shape of the piece goods and
- depositing the piece goods within the loading space.

22. Method according to claim 21, characterized in that the shaping of the piece goods takes place by mutual sliding together of the piece goods within an accumulating conveyor or by means of a handling device directly through depositing in the shaping means, so that the piece goods are compressed at least pairwise in the conveying direction of the feed unit.

23. Method according to claim 22, characterized in that the piece goods are shoved together along a piece good row and in this shoved together state are transferred into a shaping means, where the piece goods are compressed along at least one axis oriented perpendicular to the extension of the

piece good row or are brought directly up to the shaping element in individual manner by a handling device, preferably an industrial robot.

24. Method according to claim 23, characterized in that the transfer of the piece goods into the shaping means takes place by sliding or dropping the piece goods into the shaping means as a result of their own weight, the piece goods being compressed within the shaping means along the axis of gravitational acceleration or this takes place by means of a handling system, preferably an industrial robot.

25. Method according to one of the claims 21 to 24, characterized in that the piece goods are brought into shaping means, where the piece goods are shaped and the shaping means are used as loading means with which the piece goods are brought into the loading space.

26. Method according to claim 25, characterized in that a plurality of parallel, juxtaposed piece good-filled loading means are provided in such a way that their total loading means width corresponds to the loading space width and in each case the length of the individual loading means corresponds to the length of the loading space and the plurality of loading means is introduced horizontally into the loading space until the entire loading means can be positioned within said loading space.

27. Method according to claim 26, characterized in that prior to the introduction of the plurality of loading means, there is a vertical orientation of said loading means with respect to a deposition surface located within the loading space.

28. Method according to one of the claims 25 to 27, characterized in that the piece goods are separated from the loading means within the loading space for forming a horizontal layer of solely piece goods within the loading space.

29. Method according to claim 28, characterized in that separation takes place by the sliding of the piece goods from the loading means whilst the latter are moved out of the loading space.